



AF / SPT 1733

PATENT APPLICATION

PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

On Appeal from Group: 1733

Arie Hendrik Frans VAN VLIET et al.

Application No.: 09/352,612

Examiner: T. Kilkenny

Filed: July 13, 1999

Docket No.: 102222.01

For: GRID COMPRISING POLYMERIC, DRAWN STRIPS AND A PROCESS FOR
MAKING SAME

APPEAL BRIEF TRANSMITTAL

Commissioner for Patents
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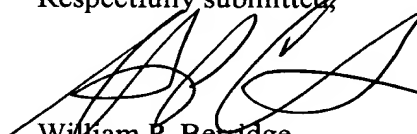
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PATENT APPLICATION

#27/1102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of:

9/23/03

Arie Hendrik Frans VAN VLIET et al.

Application No.: 09/352,612

Filed: July 13, 1999

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For: GRID COMPRISING POLYMERIC, DRAWN STRIPS AND A PROCESS FOR
MAKING SAME

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BRIEF ON APPEAL

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I. INTRODUCTION

This is an Appeal from an Office Action mailed January 13, 2003, finally rejecting claims 1-7 and 13-23 and finally withdrawing claims 9-12 of the above-identified patent application and the subsequent May 23 and July 15, 2003 Advisory Actions.

A. Real Party in Interest

The real party in interest in this Appeal in the present application is Colbond Geosynthetics GmbH, by way of an Assignment recorded at Reel/Frame 13142/0864.

B. Statement of Related Appeals and Interferences

There are presently no appeals or interferences, known to Appellants, Appellants' representative or the Assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

C. Status of Claims

Claims 1-7 and 9-23 are pending, with claims 9-12 being withdrawn. Claims 1-7 and 13-23 stand rejected. All of claims 1-7 and 9-23 are being appealed. Claims 1-7 and 9-23 are set forth in the attached Appendix of Claims. Claim 1 and 16 are independent claims.

D. Status of Amendments

The Amendment After Final Rejection filed on May 13, 2003 is the last Amendment which has been entered. Claim 1 was amended back to its original form. A May 23, 2003 Advisory Action withdrew the previous rejection of claims 16-18 in view of Yang, Kobiella and Romanek but maintained the remaining rejections. A Request for Reconsideration was filed on June 13, 2003 requesting withdrawal of the current rejections. A July 15, 2003 Advisory Action refused the request and maintained the current rejections.

II. SUMMARY OF THE INVENTION AND APPLIED REFERENCES

A. Summary of the Invention

The present invention is concerned with grids comprising drawn polymeric strips in at least two different directions, with the strips being bonded together in the zone or zones of overlap. When such grids are subjected to heavy loads, such as for instance when it is used as a "geogrid" (a geofabric composed of a grate or grid of longitudinal and transverse strips which is used as soil consolidation in dike bodies, slopes and embankments), the loaded strips in the grid have been found to break more quickly at the bonds than might have been expected on the basis of the strength of the strip itself and the bonding technique used. See Applicants' page 1, lines 9-23.

A prior known such grid is shown in Applicants' Fig. 2 reproduced below.

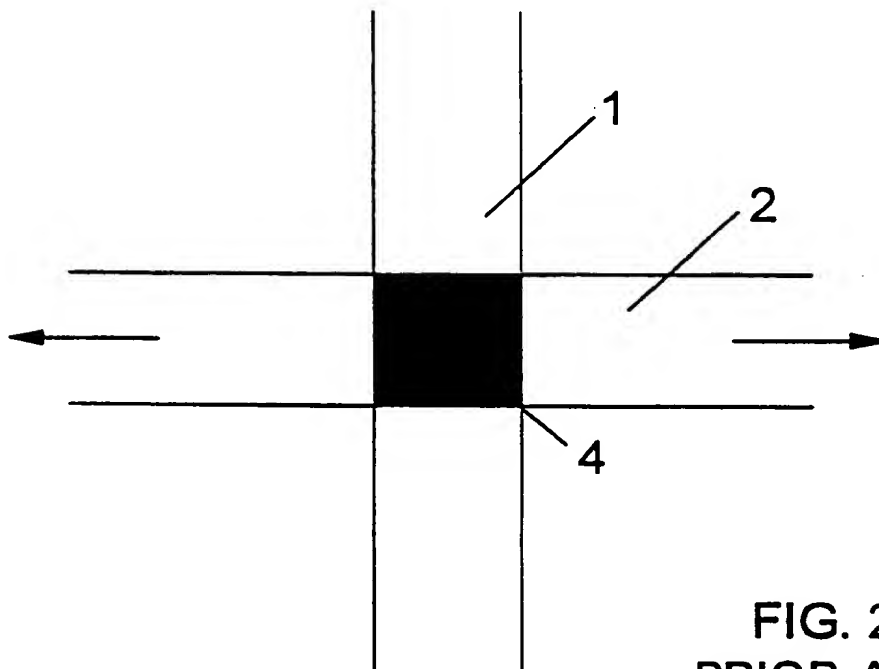


FIG. 2
PRIOR ART

Thus, an object of the present invention is to avoid this phenomenon of early rupture. It has been found by Applicants that the source of such failures is at the bonding site. See Applicants' page 1, lines 18-23 and page 2, line 7 - page 3, line 2. In particular, Applicants have discovered the source of the problem being at the point where an elongated strip under tensile force is welded to a transverse strip. Such loading causes the transverse strip to split because it has a lower strain to failure in this direction. This split, because of its attachment to the loaded strip, causes a crack in the loaded strip, which leads to early rupture. However, Applicants have solved this problem by providing spatially separated bonding points in the overlap zone. Applicants have found that because of this spatial separation, the split in the transverse strip is incapable of exerting force to the loaded strip, preventing the problem of early rupture of the loaded strip.

This problem is overcome by providing drawn polymeric strips in at least two different directions, with the strips being bonded together in the zone or zones of overlap, in which the zone of overlap comprises at least two spatially separated bonding points or lines. See Applicants' Fig. 1 reproduced below.

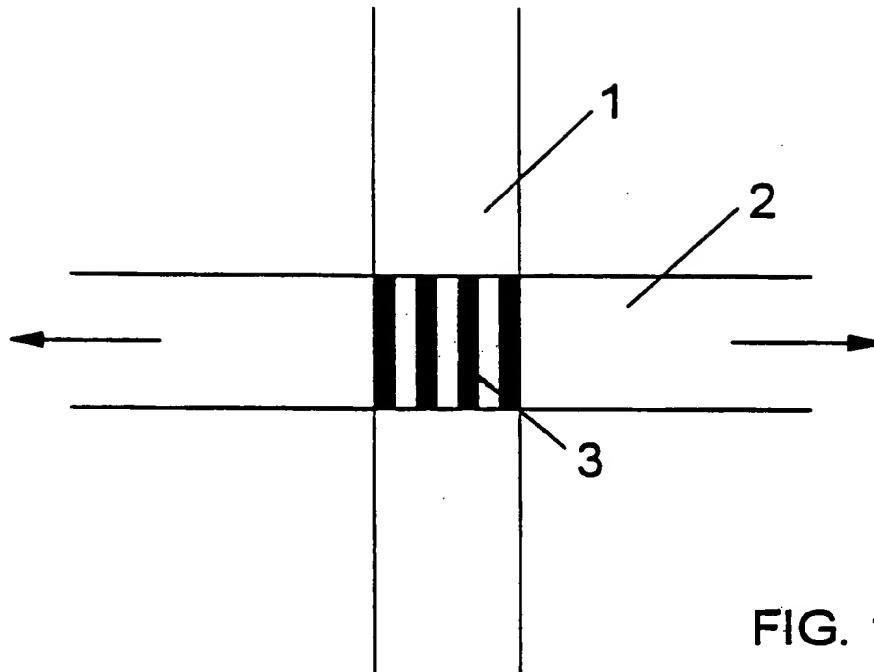


FIG. 1

B. The Claimed Invention

An exemplary embodiment of the invention provides a transparent strip (1) having a strength of 560 Mpa and a cross-section of $12 \times 0.55 \text{ mm}^2$. Strip (1) is made of polyethylene terephthalate (PET). A black strip (2) of the same material with carbon black added to the PET is placed across strip (1) at an angle of 90° and pressed together using a pressure of 1 megaPascal.

A laser beam of 0.33mm width and 6mm length is scanned across the zone of overlap of the strips (1, 2) at a speed of 2.25 cm/s. The laser is interrupted at 20 ms intervals. This results in bonding lines (3) as shown in Fig. 1 above that are spaced 0.45mm apart. See page 6, lines 8-19.

C. The Applied References

1. Canadian Pat. Publ. No. CA 2,162,686 to Van Vliet

Van Vliet teaches forming a mat (recognized as applicant's grid) by bonding the strips in at least one zone of overlap by electromagnetic radiation. However, this bonding is similar to that in Fig. 2 above, in which the entire zone of overlap is bonded.

In the sentence bridging pages 1 and 2, Van Vliet discloses a drawn weldable plastic strip by the fact that it comprises at least one surface, in which surface are embedded absorbing particles which have a distinctive higher absorption capacity for electromagnetic radiation within the frequency range from 10 to 50,000 MHz than the plastic of which the strip is made. On page 2, 2nd paragraph, Van Vliet discloses that the strips according to his invention can be made by usual methods in the manufacturing of two-layer strips, wherein however, the finished strip now has the same plastic over the whole cross-section... During welding, owing to the embedded absorption particles, almost only the region containing these particles is melted, so that outside the region containing the absorption particles disorientation of the strips is largely or even usually absent ...

So, Van Vliet discloses strips exhibiting a first region containing the absorption particles and a second region outside the first region. Regarding the geometrical shape of the first and second layer, Van Vliet discloses the following:

Page 2, 5th paragraph: Preferably the strip has a thickness which is at least ten times as great as the layer thickness of the surface layer comprising the absorption particles.

Page 4, lines 10-12: The surface layer containing the absorption particles must only have a thickness of a few tenths of a millimeter or less, for example 10 to 40 μm .

So, regarding the geometrical shape of the first and said second region, Van Vliet discloses strips exhibiting (1) as the first region a surface layer comprising the absorption particles, which surface layer extends over the total length of the strips, and (2) as the second region a layer free of absorption particles, arranged below said first region and extending over the entire length of the strips.

Regarding the formation of a mat by welding, Van Vliet discloses on page 3, lines 25-30:

The mat according to the invention ... consists of crossed strips which are welded together at their crossing points, and ... contains strips which are welded together by their surface layer containing the absorption particles.

Prima facie, the crossing points represent the entire zones of overlap of the crossed strips, which entire zones of overlap are melted in their surface layer containing the absorption particles, i.e., in the first region, which also extends over the entire zone of overlap and inevitably is welded together over the entire zone of overlap of the crossed strips. Thus, in practice, Van Vliet's grid appears as in Fig. 2 above.

2. U.S. Pat. No. 4,483,438 to Kobiella

Kobiella's technical field is that of a joint for securing together overlapping portions of a thermoplastic strap (singular). See Kobiella, column 1, line 14-16. In accordance with this teaching, the overlap of the strap is with itself (see Kobiella, Fig. 1: Strap S overlaps in portion J with itself). This overlap serves in bonding a stack of newspapers or magazines (see Kobiella, column 1, lines 64-67). Thus, Kobiella neither teaches nor is concerned with a grid comprising strips in two different directions bonded at zones of overlap. As such, the problems with premature rupture due to transverse forces being applied are not encountered nor appreciated. Thus, Kobiella's field is prima facie different from that of the present invention.

Nevertheless, one skilled in the art of grids would find in column 6, lines 8-11 that Kobiella's spaced joint J having spaced fused regions exhibits a strength of at least 75% of the strap strength. That is, Kobiella teaches that its joint suffers a loss in strength retention of up to 25% compared to the strength of the strap itself.

3. U.S. Patent No. 4,265,954 to Romanek

Romanek's technical field is that of non-woven sheets or webs of fibers which sheets or webs are fused in preselected areas (see Romanek, column 1, lines 5-8). The Examiner correctly mentioned in his rejection from January 13, 2003 that the sheet or webs bound over their entire surface become too stiff for many applications. However, too high stiffness, i.e. too low flexibility, is neither a problem of grids, nor the problem of early rupture underlying the present invention.

Nevertheless, even if one would read Romanek, he would find preselected points or areas which are preselected from the total area of the non-woven sheet or web (see Romanek, column 2, lines 29-36 and Fig. 5-8, which explicitly show, that the fused areas are preselected from the total area; also the description of figures 5-8 given in column 6, lines 40-45 do not allow any other conclusion.) Therefore, this does not mean preselected points or areas within the zone of overlap of the fibers which constitute Romanek's non-woven sheets or mats.

Quite to the contrary, to fuse at least some of the thermoplastic fibers in the preselected areas (see Romanek, column 2, lines 50-52) clearly discloses that in the preselected areas, fibers are fused over their entire zone of overlap. So, Romanek discloses a kind of bonding between the fibers from which the present invention starts. This kind of bonding gives rise to the problem of early rupture (see present invention, description page 2, lines 6-30). Romanek's non-woven sheet or web exhibiting the preselected areas described above is fused to a sheet or web of another material, the sheet or web is perforated in

preselected areas and tufting fibers are rigidly bound in a substrate of such a sheet or web, thus firmly bonding tufting materials therein and having an improved density of tufting (see Romanek, column 2, lines 56-61).

4. Canadian Pat. Publ. No. CA 1,026,522 to Saito

Saito discloses on page 3, lines 10-27 tapes consisting of a laminated plastic film of at least two layers of different polymers wherein the first layer is a crystalline layer and the second layer is a polymer of a lower melting or softening point than said first layer. The tapes are woven in a manner that the lower melting point layers of the longitudinal tapes are facing the lower melting point layer of the transverse tapes. Then, the tapes so woven are heated under pressure so that the lower melting point layers bond together at their points of contact. This clearly means that longitudinal and transversal tapes are bound over the entire zone of overlap. The same holds for the other embodiments of Saito's teaching which he discloses on page 3, line 28 - page 4a, line 16.

Saito thus discloses a kind of bonding between the tapes which is more away from the claimed invention and represents the prior art of Fig. 2.

5. French Pat. Publ. No. FR 1,506,163 to Hoechst

Hoechst discloses use of a laser to weld thermoplastic materials such as foils or strips.

6. U.S. Pat. No. 3,560,291 to Foglia

Foglia also discloses use of a laser to weld thermoplastic materials such as foils or strips.

III. THE ISSUES ON APPEAL

1. Are claims 1-5, 7 and 13-19 properly rejected under 35 U.S.C. §103(a) as obvious over Van Vliet in view of Kobiella, Romanek and Saito?

2. Are claims 6 and 19-23 properly rejected under 35 U.S.C. §103(a) as obvious over Van Vliet in view of Kobiella, Romanek and Saito, further in view of Hoechst and Foglia?

3. Are claims 9-12 properly withdrawn from consideration?

IV. GROUPING THE CLAIMS ON APPEAL

Each claim of this patent application on appeal is separately patentable, and upon issuance of a patent will be entitled to a separate presumption of validity under 35 U.S.C.

§282. For convenience in the handling of this appeal, the claims are grouped as follows:

Group I, claims 1-3, 7, 13-15 and 19-23.

Group II, claims 4-5.

Group III, claims 16-18.

Group IV, claim 6.

Group V, claims 9-12.

Each of Groups I - V will be argued separately in the following arguments. The groups do not stand or fall together.

V. LAW ON OBVIOUSNESS UNDER 35 USC §103(a)

In rejecting claims under 35 USC 103, it is incumbent on the examiner to establish a factual basis to support the legal conclusion of obviousness. See, In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), including: (A) determining the scope and content of the prior art; (B) ascertaining the differences between the prior art and the claims in issue; (C) resolving the level of ordinary skill in the pertinent art; and (D) evaluating evidence of secondary considerations.

In rejecting claims, the Patent Office bears the initial burden of persuasion in establishing a *prima facie* case of obviousness. To achieve this, the Patent Office must show

three criteria: a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine teachings; a reasonable expectation of success; and that the prior art must teach or suggest all claimed limitations. See In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See also MPEP §2143.

Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992).

All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). A showing of a suggestion, teaching, or motivation to combine the prior art references is an “essential evidentiary component of an obviousness holding.” C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not “evidence.” See Dembiczak, 175 F.3d at 1000, 50 USPQ2d at 1617. However, the suggestion to combine need not be express and “may come from the prior art,

as filtered through the knowledge of one skilled in the art.” Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 1472, 43 USPQ2d 1481, 1489(Fed. Cir. 1997).

"The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness. In re Napier, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995). The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). To rely on inherency, the examiner must "provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied art." In re Robinson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999).

In applying 35 U.S.C. §103(a), the Patent Office must: (A) consider the claimed invention as a whole; (B) consider the references as a whole when determining whether the references suggest the desirability of making a combination; (C) consider the references without the benefit of impermissible hindsight consideration of Applicant's disclosure; and (D) use a reasonable standard of success as the standard from which obviousness is determined. Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143, 229 USPQ 182, 187 (Fed. Cir. 1986).

In this regard, prior art must be viewed prospectively and not retrospectively using the patent as a blueprint to reconstruct the invention by indiscriminately picking and choosing parts and bits from the prior art. See, for example, Grain Processing Corp. v. American Maize-Products Co., 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988) ("Care must be taken to avoid hindsight reconstruction by using 'the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.' "). See also In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596,

1600 (Fed. Cir. 1988) ("One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."). This is because "[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." W. L. Gore Associates Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), *cert. Denied*, 469 U.S. 851 (1984). Instead, the well-established rule of law is that each prior art reference must be evaluated as an entirety and all of the prior art must be evaluated "as a whole." See W.L. Gore, 721 F.2d at 1550, 220 USPQ at 311.

Patent case law is clear that in considering the differences, the question is not whether the differences themselves would have been obvious, but rather whether the claimed invention "as a whole" would have been obvious. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983). Distilling an invention down to the "gist" of the invention disregards the requirement of analyzing the subject matter "as a whole." W.L. Gore. In addition, it is irrelevant in determining obviousness that all or all other aspects of the claim may have been well known in the art. Medtronic, Inc. v. Cardiac Pacemakers, Inc., 721 F.2d 1563, 220 USPQ 97, 99-100 (Fed. Cir. 1983). The invention must be considered "as a whole."

In order to consider the invention "as a whole", the Examiner must consider the context in which the invention was made, problems solved by the invention and the like. See In re Antonie, 559 F.2d 618, 620, 195 USPQ 6, 8 (CCPA 1977) where it was held that in delineating the invention as a whole, one looks "not only to the subject matter literally recited in the claims...but also to the properties of the subject matter which are inherent in the subject matter and are disclosed in the specification." Also see In re Sponnoble, 405 F.2d

578, 585, 160 USPQ 237, 243 (CCPA 1969) where it was found that discovery of the source of a problem is also part of the "subject matter as a whole" inquiry. Moreover, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that lead away from the claimed invention. W.L. Gore.

In order to fully answer the obviousness question and address the four Graham factors, the Examiner must determine who is "one of ordinary skill in the art." In considering the level of ordinary skill in the art, factors that may be considered include "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." Environmental Designs, Ltd. V. Union Oil Co., 713 F.2d 693, 696, 218 USPQ 865, 868 (Fed. Cir. 1983), *cert. Denied*, 464 U.S. 1043 (1984). The "importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991). Thus, the Examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge or a layman." Environmental Designs.

VI. ARGUMENT

A. Claims 1-5, 7 and 13-19 Are Not Obvious from Van Vliet in View of Kobiella, Romanek and Saito

Claims 1-5, 7 and 13-19 stand rejected under 35 U.S.C. §103(a) over Canadian Patent Publication No. CA 2,162,686 to Van Vliet in view of U.S. Patent No. 4,483,438 to Kobiella, U.S. Patent No. 4,265,954 to Romanek, and Canadian Patent Publication No. CA 1,026,522 to Saito.

Both independent claims 1 and 16 recite, *inter alia*, a grid comprising drawn polymeric strips in at least two different directions, wherein zones of overlap comprise at least two spatially separated bonding points or lines.

In the January 13, 2003 Final Rejection, the Office Action admits that Van Vliet fails to teach or suggest "a bonding zone of overlap comprising at least two spatially separated points or bonding lines" (See OA page 3, lines 7-11). For this deficiency, the Office Action relies on Kobiella Fig. 2 which shows a plurality of separated bonding lines in a zone of overlap. The Office Action also relies on Romanek for a teaching of patterned bonding areas in Figs. 5-8. Finally, the Office relies on Saito for a teaching of uniaxial stretching of a polymeric strip.

In response to Applicants' May 13 Amendment After Final Rejection and subsequent June 13 Request for Reconsideration, the Examiner now changes his position. The latest July 15 Advisory Action backs away from reliance on the secondary references to Kobiella, Romanek and Saito. Because these references are not relied upon in maintaining the rejection, it is Applicants' position that the Examiner has acquiesced to Applicants' arguments against the motivation to combine Van Vliet with Kobiella, Romanek and Saito.

As such, it appears that the Patent Office now relies solely on the teachings of Van Vliet in rejecting the claims, presumably under either 35 U.S.C. §102 or §103.

In particular, the July 15 Advisory Action states that Van Vliet teaches (1) "embedding absorbing particles in a surface of a weldable plastic strip such that during welding almost only the region containing these particles is melted, so that outside the region containing the absorption particles disorientation of the strips is largely or even usually absent." The Advisory Action further states that it is the Examiner's position that (2) "the regions of melting as disclosed by Van Vliet are the regions directly comprising the absorption particles. In disclosing to embed the particles, Van Vliet suggests that the

absorption particles are embedded in the surface of elements to be welded in such a quantity that the distance between adjacent absorption particles is smaller than the thickness of the surface layer that contains the absorption particles" (Van Vliet, page 5, lines 21-27).

From these two points, the Examiner draws a conclusion that "the embedded particles are spaced from each other." The Examiner goes on to conclude that this "spacing suggests that the entire zone of overlap in the mat as disclosed would also comprise spaced absorption particles and therefore have regions within the zone of overlap that do not contain absorption particles are therefore are not melted." This, in the Examiner's position, defines spatially separated bonding points.

Applicants respectfully disagree with the Examiner's ultimate conclusions, which are believed to be made purely based on speculation and impermissible hindsight consideration of Applicants' specification.

The Examiner is correct in the above first two points. From this latter point, he draws a first conclusion in which the embedded absorption particles are spaced from each other. This is correct.

The Examiner then draws a second conclusion in which the entire zone of overlap comprises absorption particles; therefore, there are regions within the zone of overlap that do not contain absorption particles. This conclusion is also correct.

However, the Examiner then draws a third conclusion that the regions that do not contain absorption particles are not melted (and thus form spatially separated bonding points). This conclusion is erroneous.

Van Vliet must be read in its entirety to what it would fairly teach to one of ordinary skill in the art. Page 5, lines 27-31 teach that "the smaller the distance is between adjacent absorption particles, the more the generation of heat is concentrated on the surface layer which contains the absorption particles." Page 2, lines 10-12 also states that "during

welding, owing to the embedded absorption particles, almost only the region containing these particles is melted."

From this, one would have recognized that the surface layer which contains the absorption particles is identical with the region containing these particles and that the "region" is melted. Consequently, because of the closely spaced particles and concentration of heat on the region, the region (i.e., the thin surface layer) containing the particles is melted as a whole, i.e., the entire zone of overlap containing the absorption particles is melted forming a bonding zone that encompasses the entire zone of overlap. Thus, weld (4) in Fig. 2 extends over the entire zone of overlap.

Thus, the Examiner's ultimate conclusion as to Van Vliet teaching separate bonding points or lines has no factual basis from the explicit teachings of Van Vliet and can only be based on speculation or impermissible hindsight. That is, the teachings of Van Vliet when read in their entirety would not have led one of ordinary skill in the art to any indication that the small distance between absorption particles would lead to non-melted regions between the particles as alleged. Rather, the teachings of Van Vliet on page 5, lines 27-31 teach that the distance between adjacent particles is merely a measure to concentrate the heat generation in the surface of the entire zone of overlap by which the strips are bonded together. That is, the smaller the distance, the greater concentration of heat in the surface of overlap, which results in greater melting of the strip polymer in the zone.

As discussed previously, Van Vliet does not appreciate the problems faced by the claimed invention or the solution. Consequently, Van Vliet fails to teach or suggest a zone of overlap in a grid with two intersecting strips having at least two spatially separated bonding points or lines as recited in independent claims 1 and 16.

The various secondary references fail to overcome the deficiencies of Van Vliet with respect to these claims.

As discussed in Applicants' June 13 Request for Reconsideration, Kobiella is directed to a single strap. As such, it does not face the problems of being subjected to tensile loads in two directions as does the claimed grid. That is, as a result of this tensile force there is an elongation of the strip. At the point of intersection (in the zone of overlap) of the two intersecting strips, this elongation translates into a transverse force. It is in this transverse direction that drawn strips have a lower strain to failure, which may cause the transverse strip to split. This split in turn acts on the loaded strip, since they are bonded together, which gives rise to early rupture of the loaded strip. See Applicants' page 2, lines 17-30.

Although Kobiella teaches spatially separated bonding, it is in the context of a single strip bonded to itself. As such, it is not subjected to the transverse force acting on another strip member as discussed above. Moreover, since Kobiella itself recognizes that its bonding method results in a bonding area with only 75% of the strength of the strips (col. 6, lines 8-11), one would readily recognize that this bonding results in a loss of strength of up to 25%. Someone trying to prevent early rupture would have been taught away from the alleged combination since Kobiella recognizes a reduction in holding strength from that achievable in conventional 2-dimensional grids. For example, see Applicants' page 6, lines 22-27 where it is pointed out that the prior art bonding of the entire zone of overlap (such as Fig. 2 above), exhibits only a 15% loss in strength retention..

Thus, since entire bonding, such as in Van Vliet, has improved strength from that taught to be achievable by Kobiella, one would have been led against the combination.

Romanek also fails to overcome the deficiencies of Van Vliet. Although the Examiner points out that Romanek teaches to use preselected bonding areas for web sheets that become too stiff, high stiffness (i.e., low flexibility) is neither a problem of grids nor a problem of early rupture. Therefore, one of ordinary skill in the art looking at improving grids would not have looked to Romanek and the alleged motivation for the combination is

improper. Moreover, even if Romanek were read, it is a leap to assume that there are spatially separated bonding points as alleged. Preselected bonding areas to the contrary would more likely imply to one of ordinary skill in the art that the preselected areas are wholly fused at their overlap.

Saito too fails to overcome the deficiencies of Van Vliet. Saito also provides bonding of the entire zone of overlap.

Accordingly, independent claims 1 and 16 are not obvious from Van Vliet alone or even if impermissibly combined with Kobiella, Romanek and/or Saito. The applied references also fail to anticipate the subject matter of dependent claims 2-7, 9-15 and 17-23, which depend from base claims 1 and 16 and are allowable for their dependence thereon and for the additional features recited therein.

In particular, none of the references taken singularly, or in combination, teach the further recitation of a width of the bonding points or lines being 5 mm or less (claim 4), or 3 mm or less (claim 5). Since no specific spatial separation is taught, the specific range of bonding point widths would have been obvious.

None of the references taken singularly, or in combination, teach the further recitation that the grid has a strength about equal to the higher tensile strength in the lengthwise direction of the strips (claims 15 and 16). That is, Applicants have found that the strength of grids that are loaded in a direction perpendicular to three or more spatially separated and parallel bonding lines can be virtually equal to the sum of the strips strength in that direction. See Applicants specification at page 3, lines 3-12. None of the references teach or suggest that a zone of overlap with spatially separated bonding points or lines can have a strength about equal to the higher tensile strength in the lengthwise direction of the strips.

If anything, Kobiella teaches an inferior strength of its bonding and teaches against such spatial separation.

Moreover, one skilled in the art of grids if comparing Van Vliet's grid with the grid of the comparative example of the present invention (see description of the present invention, page 6, lines 8-27) would find that Van Vliet also would suffer a large strength loss of about 15% based on the following:

	Van Vliet	Present Invention
Strip material	Plastic (Title)	Polyethylene terephthalate
Thickness of layer containing adsorption particles	a few tenths of a millimeter or less e.g. 10 to 40 μm (page 4, lines 10-12)	5-100 μm (p. 4, l. 30-32) and 0.02 mm = 20 μm (page 4, line 24)
Material of particles	soot (page 6, lines 2-4)	carbon black (page 6, line 15)

One immediately recognizes that Van Vliet's grid is about the same grid as the comparative grid of the present invention, which suffers a large (~ 15%) decrease in strength retention. Inevitably, Van Vliet's grid also suffers from about the same degree of strength retention.

This clearly shows that Van Vliet discloses a kind of grid that exhibits the problem of early rupture. This problem was solved for the first time by a grid with zones of overlap comprising at least two spatially separated bonding points or lines (see claim 1 of the present invention), which leads to no such decrease in strength in spite the occurrence of cracks (see present invention, page 6, last paragraph), i.e., to 100% strength retention. See claims 15-16.

Consequently, the Examiner's statement "Although Van Vliet doesn't positively address the problem of early rupture, this benefit would directly flow from Van

Vliet's teaching to generate fused and unfused regions in the zone of overlap of crossed strips in forming a grid like mat" is factually inaccurate.

Withdrawal of the rejection under 35 U.S.C. §103(a) is therefore respectfully solicited.

B. Claims 6 and 19-23 Are Not Obvious from Van Vliet in View of Kobiella, Romanek and Saito, Further in View of Hoechst and Foglia

Claims 6 and 19-23 stand rejected under 35 U.S.C. §103(a) over Canadian Patent Publication No. CA 2,162,686 to Van Vliet in view of U.S. Patent No. 4,483,438 to Kobiella, U.S. Patent No. 4,265,954 to Romanek, and Canadian Patent Publication No. CA 1,026,522 to Saito, further in view of French Patent Publication No. FR 1,506,163 to Hoechst and U.S. Patent No. 3,560,291 to Foglia.

Claims 19-23 are deemed allowable for their dependence on allowable base claim 1.

Claim 6 depends from claim 1 and adds that the spatially separated bonding points or lines are welded by a laser. For this feature, the Examiner relies on Foglia and Hoechst. Although these references teach use of a laser, they do not appreciate or teach the use of such to form spatially separated bonding points or lines as claimed.

Accordingly, claim 6 is deemed allowable for its dependence on allowable base claim 1 and for the additional features recited therein. Withdrawal of the rejection under 35 U.S.C. §103(a) is therefore respectfully solicited.

C. Claims 9-13 Should Be Rejoined

Claims 9-12 stand finally withdrawn as directed to non-elected subject matter. Applicants previously traversed this withdrawal.

Claims 9-12 are directed to processes of manufacture of the grid of claim 1. According to MPEP 821.01, whenever a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all of the limitations of

the allowable product claim will be rejoined. Since independent product claim 1 is allowable for the reasons discussed above, Applicants respectfully request rejoinder of withdrawn claims 9-12.

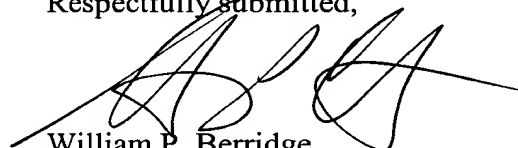
VII. CONCLUSION

For at least the reasons discussed above, it is respectfully submitted that claims 1-7 and 9-23 contain patentable subject matter and are distinguishable from the applied art.

Appellant respectfully requests this Honorable Board to reverse the final rejection of the claims and return the application to the Examiner to pass this case to issue.

Moreover, because of the allowability of product claim 1 for the foregoing reasons, Applicants also respectfully request this Honorable Board to direct the Examiner to rejoin withdrawn claims 9-12 directed to the corresponding process as required under MPEP 821.04. These claims depend from and otherwise include all of the features of allowable base claim 1 so rejoinder is necessary to avoid undue burden to Applicants and duplicative prosecution by the Patent Office.

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Appendix of Claims



APPENDIX OF CLAIMS

Current Claims:

1. (Represented Original Claim 1) A grid comprising drawn polymeric strips in at least two different directions, with the strips being bonded together in at least one zone of overlap, wherein said at least one zone of overlap comprises at least two spatially separated bonding points or bonding lines.
2. (Original) A grid according to claim 1, wherein said at least one zone comprises three or more spatially separated and parallel bonding lines.
3. (Previously Presented) A grid according to claim 1, wherein said at least one zone comprises at least one bonding point or line at or near each angular point where the strips are bonded of the at least one zone.
4. (Previously Presented) A grid according to claim 1, wherein a width of the bonding points or lines is 5 mm or less.
5. (Previously Presented) A grid according to claim 1, wherein a width of the bonding points or lines is 3 mm or less.
6. (Previously Presented) A grid according to claim 1, wherein the bonding points or lines are welded by means of a laser.
7. (Previously Presented) A grid according to claim 1, wherein the strength of a part of each bonding point or line at an edge of the at least one zone of overlap is lower than the strength of a part of each bonding point or line at and near the center of the at least one zone or overlap.
8. (Canceled).
9. (Withdrawn) A process for manufacturing the grid according to claim 1, comprising placing at least two strips one on top of the other, pressing the at least two strips

together, and heating with a radiation source emitting electromagnetic radiation, wherein the strip that faces the radiation source is at least partially transparent to the radiation, while at the points where the strips are bonded together, the material absorbs said radiation.

10. (Withdrawn) A process according to claim 9, wherein the strip facing the radiation source is made entirely of transparent material.

11. (Withdrawn) A process according to claim 9, wherein the strip facing the radiation source comprises at least two different materials.

12. (Withdrawn) A process according to claim 9, wherein the radiation source used is a laser.

13. (Previously Presented) The grid of claim 1, wherein said at least one zone of overlap comprises at least two spatially separated bonding lines.

14. (Previously Presented) The grid of claim 1, wherein said at least one zone of overlap has a surface area of about a product of a width of the strips multiplied by the width of the strips.

15. (Previously Presented) The grid of claim 1, wherein the grid has a strength about equal to the higher tensile strength in the lengthwise direction of the strips.

16. (Previously Presented) A grid comprising drawn polymeric strips in at least two different directions, wherein the strips have a higher tensile strength in a lengthwise direction of the strips compared to a tensile strength in a width direction of the strips, wherein the strips are bonded together in at least one zone of overlap, wherein said at least one zone of overlap comprises at least two spatially separated bonding points or bonding lines, and wherein the grid has a strength about equal to the higher tensile strength in the lengthwise direction of the strips.

17. (Previously Presented) The grid of claim 16, wherein said at least one zone of overlap comprises at least two spatially separated bonding lines.

18. (Previously Presented) The grid of claim 16, wherein said at least one zone of overlap has a surface area of about a product of a width of the strips multiplied by the width of the strips.

19. (Previously Presented) The grid according to claim 1, wherein the strips comprise a layer transparent to electromagnetic radiation and a layer that absorbs electromagnetic radiation.

20. (Previously Presented) The grid according to claim 19, wherein the layer that absorbs electromagnetic radiation is pigmented.

21. (Previously Presented) The grid according to claim 1, wherein the strips comprise a layer of a material that absorbs electromagnetic radiation sandwiched between layers that are transparent to electromagnetic radiation.

22. (Previously Presented) The grid according to claim 21, wherein the layer that absorbs electromagnetic radiation is a film or a foil.

23. (Previously Presented) The grid according to claim 21, wherein the layer that absorbs electromagnetic radiation is 5-100 μm thick.